

May 7, 2013

Mr. Andre Arnold Project Director Department of General Services 707 Third Street, Suite 3-305, MS 502 West Sacramento CA 95605 andre.arnold@dgs.ca.gov

RE: Industrial Hygiene Report for Pipe Investigation Work conducted on Friday April 26-Saturday April 27, 2013

Dear Mr. Arnold,

GHD performed pipe investigation work in the Men's Restroom located at the Northwest corner of the 24<sup>th</sup> floor. All pipe investigation work was conducted above ceiling. No destructive means were needed for access above ceiling. During an investigation of the anticipated work area, conducted on Thursday April 18, 2013, the plumbing cavity (isolated with plastic sheeting) appeared to have water related damage behind one of the toilet fixtures. On Friday April 26, 2013, Pipe Investigation work was conducted in accordance with the procedures outlined in the *Industrial Hygiene Work Plan for Board of Equalization Building, 450 N Street, Sacramento CA, Pipe Corrosion Investigation Project,* dated April 26, 2013.

Allied Environmental set-up a two- chambered negative pressure containment. The work area above the ceiling was prepared with plastic sheeting beneath the work pipe investigation work area and the plumbing cavity was covered with an additional layer of plastic sheeting. After containment preparation work, workers of other trades were able to conduct the pipe investigation procedures of this project. Smoke testing was conducted prior to work procedures to verify negative pressure was achieved in the containment. A spore trap sample was collected during pipe investigation work procedures. At the end of the pipe investigation work, the negative air machines were left in the 'on' position to allow the air to 'scrub'. On Saturday April 27, 2013, final work air samples were collected. These samples were then taken to the accredited laboratory for same day analysis. All spore trap air results were unremarkable and showed no unusual levels. The containment was disassembled on Saturday April 27, 2013.

#### **CLOSING**

GHD performed these hazardous materials survey services in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

This report is intended as an informational resource for Department of General Services.

If you have any questions or concerns regarding this document please do not hesitate to call GHD at (916) 372-6606.

Job number: 8410430 - 10



#### SIGNATURES & QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Report prepared for Department of General Services by:

Erica Sattar, CSST CDPH Industrial Hygiene Technician

Certified Site Surveillance Technician #08-4327 CDPH Lead Sampling Technician #20425

ion E. Sattar

Report prepared and reviewed for Department of General Services by:

Chris Smith, CAC CDPH

Certified Asbestos Consultant #05-3823

CDPH Lead Inspector-Assessor/Project Designer #12430

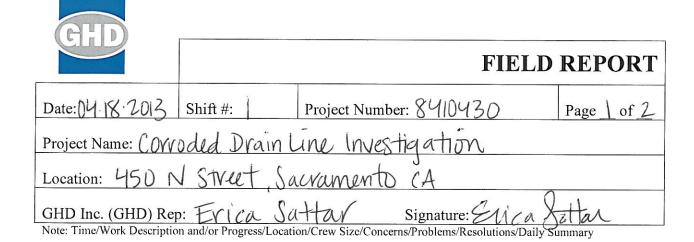
Attachments:

**GHD Field Reports** 

Analytical Laboratory Data



**GHD Field Reports** 



				W. Alv.	000 000				, <del>1</del> ,			
DAILY SU	MMARY											
Shift Start Time: 16:00pm Shift Stop Time: 8:45pm # Of Contractors On-Site: 4												
	A	rea	Hour	Readin	g Hou	ır Re	ading	Hour	Reading	Hou	r Re	ading
Manometer Re	anometer Readings											
Manometer Rea	adings		(9									`
SUMMAR	Y OF EV	ENTS:										
Allied 1	erforme	d the foll	owing	:	ninte.							
Area	Tasks or Events Completion # workers											
	untoaded equipment/materials 1002 2											
	fir sturage in Elect-Room on											
untoaded equipment/materials 100% 2 fix storage in Elect-Room on 24th Floor. Inscrted planking above ceiling 100% 2												
	Inserted planking above ceiling 100% 2										2	
	92 5500	,		J				٦				
	ai.											
Number of S	Samples:	PCM	/	TEM	/	AA	/	PL	М /	Air-	o-cell	Ø
GHD performed the following:												
visual inspection of above ceiling work area of men's 24th Floor restroom.												
men's 24th Floor restroom.												

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Date: 14-18-2013	Shift #:	Project	Number	: 841043	50	Page Lof	2
Project Name: COV	roded Drain	line	inves	tigation			
Location: 450 I							
GHD Inc. (GHD) Rep	o: Ecica So	Har		Signature:	71/6/1	Lettan	

Note: Time/Work Description and/or Progress/Location/Crew Size/Concerns/Problems/Resolutions/Daily Summary

#### **DAILY LOG:**

DAILY	LUG:	
Time	Area	Summary of Events
6:000	m	GHD arrives on site. Allied on site as well as
1		Brice Plumbing. Acress issues causing slight
		delay in project meeting start-up.
10 1500 - 10 150		Abel & mario (Africa)-briefed on project and set-up
		plan for tonight.
7:30x	2M	Brie mechanical HTI Allied & GHD IH onsite &
٧		ready for preparation of work area - above ceiling
		in 24th floor men's restruom.
8:000	m	HTI & GHD inspect above ceiling work area
•		and in the plumbing cavity (currently
		covered with plastic & scened w/ tape) visible
		staining of unknown is present Because the
		area is tight & does not allow accuss to assess
	T-00 0- 00- 0	Stain area is secured wit & work for the right
		is stopped. All parties sievre materials & egrip. Men's restroom is left in its original state.
		men's restroom is left in its original state.
3:45p	M	All parties off-site-End of Stiff
`		
	The Contract of the Contract o	

GHD		FIELD	REPORT
Date: 04-26-2013	Shift #: 2	Project Number: 8410430	Page of 3
Project Name: (OV)	oded Drain	n Line Investigation	
Location: 450 N	1 Street, Sa	cramento CA	
GHD Inc. (GHD) Rep		Signature: Such	Sattan

DAILY SU	MMARY	100 6											
Shift Start Time: 1830 Shift Stop Time: 0100 # Of Contractors On-Site: 6													
	Ar	Area Hour Reading Hour Reading Hour Reading Hour Reading											
Manometer Rea	adings												
Manometer Rea	Readings												
SUMMARY	Y OF EV	ENTS:											
Allied p	erformed	l the foll	owing	;									
Area	Tasks or	Events							Comp	olet	ion	# wor	kers
24th F1	Containment set-up												
mens		1002 2											
Restrum			-										
4	+ Above ceiting -work area 'prep' 100% 2												
Number of S	amples:	PCM	Ø	TEM	Ø	AA	0	PLN	M E	7	Air-	o-cell	2
GHD performed the following:													
WOVL a	rea il	rspec	tion										
contain	ment	inspe	ctio	2									
Work area inspection containment inspection work progress sample collection													
, , , ,	U		,										



Date: 04-26-2013 Shift #: 2 Project Number: 8410430 Page 20f3

Project Name: COVVOded Drain Line Investigation

Location: 450 N Street Sacramento CA

GHD Inc. (GHD) Rep: EMCA Sattar Signature: Suca Latar

Note: Time/Work Description and/or Progress/Location/Crew Size/Concerns/Problems/Resolutions/Daily Summary

#### **DAILY LOG:**

Time	Area	Summary of Events
1830		on-site w/ Brice mech, Allied Envir, Flownite,
		testing Eng. & BOE. Brief safety meeting &
		plan for tonights investigation procedures/order of
		events.
		Plan: construct intainment, change fittings of pipe,
		execute camera work, collect pipe samples, let air
		scrub, collect samples tomorrow morning followed by
		disassambly of untainment.
1900		Allied & brie load materials/equipment up to
		124th Floor Containment size is disscussed & agreed
		to by all parties involved in work procedures.
1930		Affied begins constructing containment.
		Penetrations at west wall / toilitseat cover dispenser &
		toilet scals are scaled w/ tape and/or plastic 1 tapes.
2100		Allied scures flaps of contamment, negative air
		(HEPA filtered) has been put into place. There is visible
		evidence containment is under negative pressure. Expir is being exhausted into ceiting vent at
		Ex Air is being exhausted into ceiting vent at
		north portion of restroom ceiling-Area proped of townk
2210		Brie Mech enter containment in full suit (tyvek).
		6HD conducts smoke test to assure regative pressure.
		Negative pressive is ible with smoke test of containment
CHD In	2021	North Fraguety Plyd Suite 220 Segrements CA 05924 USA



NAME OF THE PROPERTY OF THE PR	and the second s	
Date: 194-26-2013 Shift #: 2	Project Number: 8410430	Page Z of 3
Project Name: Corrided Dro	in line invotigation	
Location: 450 N STreet.	1	
GHD Inc. (GHD) Rep: E Satta	N Signature: S	attar
Note: Time/Wark Description and/or Progress/L	agation/Cray Size/Concerns/Problems/Pasalutions/	Jaily Summary

Note: Time/Work Description and/or Progress/Location/Crew Size/Concerns/Problems/Resolutions/Daily Summary

Howrite Plumbing anters containment, Brice exits  Camera work now in progress, Brice dons Tyrck  I durntaminates earipment utilizing the Avac.  Allied place an addition air machine at restroom entrance for addition air scrubbing intside the work axea.  2330 cannera work is complete. Flourite decors appropriately.  Testing Engineers parforms pipe scan - Brice caps pipe with all place investigation at this location—testing Engil & Brice have donned Full suits and duon equipment. Off collects post work area samples.  Ontside deem and at briving extensy.  2430 2449 Floor women's restroom is inspected for pipe work scheduled next week No visible staining/concerns in area.  2500 All work complete - All parties off-site - End 88h	Time	Area	Summary of Events
Camera work now in progress brice dons Tyrck of dumtaminates earpment utilizing tEPA v. Allied place an addition air machine at restroom entrance for addition air scrubbing intside the work area.  2330 camera work is complete - Flowrite decores appropriately.  Testing Engineers performs pipe scan - Brice caps pipil with all pipe investigation at this location - testing Engineers performs at this location - testing Engineers particularly and the equipment. Of the collects post work area samples.  Ontside deem and at briding extendr.  2430 24th Flow women's restroom is inspected for pipe work scheduled next week No visible staining concerns in area.			walls are usibly being pulled in
Attied place an addition air machine at restroom entrance for addition air scrubbing ontside the work area.  2330 camera work is complete - Flowrite decors appropriately.  Testing Engineers parforms pipe scan - Brie caps pipi 2415 with all pipe investigation at this location - Testing Eng of Brie have donned Full suits and duch equipment. Offo collects post work area samples.  Ontside deem and at builing extensor)  2430 2449 Flow woman's restroom is inspected for pipe work scheduled next week No visible staining/	2230	)	Flowrite Plumbing enters containment Brice exits
Attied place an addition air machine at restroom entrance for addition air scrubbing ontside the work area.  2330 camera work is complete - Flowrite decors appropriately.  Testing Engineers parforms pipe scan - Brie caps pipi with all pipe investigation at this location - testing Eng of Brie have donned Full suits and duch equipment. Ofto collects post work area samples.  Ontside deem and at builing exterior)  2430 2449 Flow woman's restroom is inspected for pipe work scheduled next week No visible staining/ conjects in area.			Camera work now in promess, Brice dons Tyrck
Attied place an addition air machine at restroom entrance for addition air scrubbing ontside the work area.  2330 camera work is complete - Flowrite decors appropriately.  Testing Engineers parforms pipe scan - Brie caps pipi with all pipe investigation at this location - testing Eng of Brie have donned Full suits and duch equipment. Ofto collects post work area samples.  Ontside deem and at builing exterior)  2430 2449 Flow woman's restroom is inspected for pipe work scheduled next week No visible staining/ conjects in area.			& dumtaminates earignent utilizing HEPA VAC.
entrance for addition air scrubbing mtside the work area.  2330 cannera work is complete - Flowrite decords appropriately.  2340 Testing Engineers performs pipe scan - Brice caps pipe with all pipe investigation at this location - Testing Eng a Brice have donned Full suits and duch equipment. Off collects post work area samples.  (mtside deum and at birling externor).  2430 24th Floor woman's restroom is inspected for pipe work scheduled next week No visible staining/conjections in area.			Allied places an addition air machine at restroom
canners work is complete - Flowrite decords appropriately.  Testing Engineers performs pipe scan - brice caps pipi with all pipe investigation at this location - testing Eng & Brice have donned Full suits and duch equipment. Off collects post work area samples.  Ontside deem and at builing extensor)  2430  2440  2440  2440  Pipe work scheduled next week No visible staining/ convers in area.			
camera work is complete - Flowrite decors appropriately. Testing Engineers performs pipe scan - Brie caps pipil 2415 with all pipe investigation at this location - Testing Eng & Brie have donned Full suits and duch equipment. bith collects post work area samples. (intside deem and at builing externor) 2430 24th Floor woman's restroom is inspected for pipe work scheduled next week No visible staining/		200000	
appropriately. Testing Engineers performs pipe scan - Brie caps pipe with all pipe investigation at this location - Testing Eng of Brie have donned Full suits and dewn equipment. Ofto collects post work area samples.  (intside deem and at briting extensy)  2430  2449 Floor woman's restroom is inspected for pipe work scheduled next week No visible staining/	2330		
Testing Engineers performs pipe scan - Brie caps pipe 1945  with all pipe investigation at this location - Testing Eng & Brie have donned Full suits and dewn equipment. BttD collects post work area samples.  (ontside deem and at builing externor)  2450  2450  2450  Testing Eng & Brie have donned Full suits and dewn equipment. BttD collects post work area samples.  (ontside deem and at builing externor)  2450  Type work scheduled next week No visible staining/ concerns in area.			
testing Eng of Brile have donned FULL suits and duch equipment. OHD collects post work area samples.  (ontside deum and at builing extendr)  2430  24th Flour woman's restroom is inspectfed for pipe work scheduled next week No visible staining/	2340		Testing Engineers performs pipe scan - Brice caps pipil
testing Eng & Brile have donned Full suits and dewn equipment. OHD collects post work area samples.  (ontside deam and at builing externor)  2430 24th Floor woman's restroom is inspectfed for pipe work scheduled next week No visible staining/ conjectors in area.	2415		with all place investigation at this location -
equipment. GHD collects post work area samples.  (ontside dean and at builing extensor)  2420  2420  2420  Pipe work scheduled next week No visible staining/ concerns in area.			Testing Eng & Brile have donned Full suits and dewn
2430 24th Floor woman's restroom is inspectfed for pipe work scheduled next week No visible staining/			equipment. OHD collects post work area samples.
2430 24th Flow women's restroom is inspected for pipe work scheduled next week No visible staining/			(ontside dem and at briging externor)
pipe work scheduled next week No visible staining	2430		24th Floor woman's restroom is inspected for
conjorns in area.			Dior MAXK schoduled next inject No visible staining
2500 All WNX complete - All parties off-site - End &8h			
	1500	- 200	All work complete - All parties off-site- Find & 8h
	2,00		1
		7.7.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	

GHD		FIELD	REPORT
Date: 04-27-7013	Shift #: 3	Project Number: 8410430	Page \_ of_
Project Name: (10)	roded Drai	n line investigation	
Location: 450 N			
GHD Inc. (GHD) Re	p: Enca So	Hal Signature: SMa	Aattar
Note: Time/Work Description	on and/or Progress/Locat	ion/Crew Size/Concerns/Problems/Resolutions/Daily	Summary

	27 12 25 25 E	1 00 - 10 N 10 - 50 M 10 - 50 M	48				400000000000000000000000000000000000000	- W	49 10000 1000 10	100000000000000000000000000000000000000		
DAILY SUN	MMAF	RY	eni.									
Shift Start T	ime:	0745	Shif	t Stop Tir	ne: \	200		"# Оf	Contract	ors O	n-Site:	1
		Area	Hour	Reading	Hou		idiyg	Hour	Reading	Hou	Rea	ıding
Manometer Rea	dings											
Manometer Rea	dings											
SUMMARY	OFI	EVENTS:										
Allied p	erfori	ned the foll	owing:									
Area	Tasks	s or Events							Complet	ion	# wor	kers
244 Flow Muns Yestroom	ow containment Disassembly 100% 1											
Number of S	ample	s: PCM	D	TEM	0	AA	0	PLN	M Ø	Air-	-o-cell	4
GHD performed the following:												
Final work-disassembly inspection-passed visual area left in implifying found collected air samples, delivered to lab for analysis												



Date: 04-27-2013 Shift #: 3	Project Number: 8410430	Page 2 of 2
Project Name: COVV I ded Dra	ain time Investigation	
Location: 450 N Street		
GHD Inc. (GHD) Rep: E. Satt		
Note: Time/World Description and/or Progress/Le	agation/Cray Siza/Congarns/Problems/Pagalutions/	Daily Summony

Note: Time/Work Description and/or Progress/Location/Crew Size/Concerns/Problems/Resolutions/Daily Summary

Time	Area	Summary of Events
0745	_	6HD omisite. 6HD & HTI collect extensor
0900		air samples followed by interior samples at: containment interior, containment extenior (decon),
		containment intenor, containment extenior (decon),
		man C & restram Party 110
		on same day two armd.
		on same day trin armd.
100		Dample results received - unremarkable; no
		involute of to disassemble intainment. OHD
		contacts Allica
1200		Allied & bttD on-site for tear down.
300		Restroom, men's on 24th floor in condition priv
		to pipe investigation work.
		to pipe investigation work.  OHD & Ahier offsite
		$(a \land b)$
		(9)
	<u> </u>	



**Analytical Laboratory Data** 



Report for:

Ms. Erica Sattar GHD Inc. 3831 North Freeway Blvd., Suite 220 Sacramento, CA 95834-1933

Regarding: Project: 8410430; Corroded Drain Line Invest.

EML ID: 1055837

Approved by:

Lab Manager Malcolm Moody **REVISED REPORT** 

Dates of Analysis: Spore trap analysis: 04-30-2013

Service SOPs: Spore trap analysis (1038 (previously I100000 and I100007)) AIHA-LAP, LLC accredited service, Lab ID #179768

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: GHD Inc. Date of Submittal: 04-27-2013 Date of Receipt: 04-27-2013 C/O: Ms. Erica Sattar Re: 8410430; Corroded Drain Line Invest. Date of Report: 04-27-2013

#### SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:		613-01:		513-02:		713-01:
		on Unit		orth Entrance		outh Entrance
Comments (see below)		None		Vone		None
Lab ID-Version‡:	474	9600-2	474	9601-2	4749602-2	
Analysis Date:	04/3	30/2013	04/3	30/2013	04/3	30/2013
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Alternaria					1	13
Ascospores			5	270	4	210
Basidiospores	1	53	10	530	5	270
Chaetomium						
Cladosporium			5	270	12	640
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown					1	13
Other colorless						
Penicillium/Aspergillus types†						
Pithomyces						
Rusts					1	13
Smuts, Periconia, Myxomycetes	1	13	4	53	2	27
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+		1+		2+	
Hyphal fragments/m3	27		130		53	
Pollen/m3	13		40		80	
Skin cells (1-4+)	1+		< 1+		< 1+	
Sample volume (liters)	75		75		75	
§ TOTAL SPORES/m3		67		1,100		1,200

#### **Comments:**

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

The analytical sensitivity is the spores/m3 divided by the raw count. The limit of detection is the analytical sensitivity multiplied by the sample volume divided by 1000.

EMLab P&K, LLC EMLab ID: 1055837, Page 2 of 3

<sup>†</sup> The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.

<sup>††</sup>Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher then reported. It is important to account for samples volumes when evaluating dust levels.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.  $\ddagger$  A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

<sup>§</sup> Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

Client: GHD Inc. Date of Submittal: 04-27-2013 Date of Receipt: 04-27-2013 C/O: Ms. Erica Sattar Re: 8410430; Corroded Drain Line Invest. Date of Report: 04-27-2013

#### SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:		713-02: RR Entrance		713-03: ontainment		713-04: Jorth Entrance	
Comments (see below)		None		Vone		None	
· · · · · · · · · · · · · · · · · · ·		9603-2		9604-2			
Lab ID-Version‡:					4749605-2		
Analysis Date:	04/3	80/2013	04/3	80/2013	04/3	30/2013	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	
Alternaria							
Ascospores					4	210	
Basidiospores			1	53	8	430	
Chaetomium							
Cladosporium	1	53					
Curvularia							
Epicoccum							
Fusarium							
Myrothecium							
Nigrospora							
Other brown							
Other colorless							
Penicillium/Aspergillus types†					24	1,300	
Pithomyces						,	
Rusts							
Smuts, Periconia, Myxomycetes	1	13	4	53	1	13	
Stachybotrys							
Stemphylium							
Torula					1	13	
Ulocladium							
Zygomycetes							
Background debris (1-4+)††	2+		3+		2+		
Hyphal fragments/m3	13		13		27		
Pollen/m3	13		27		80		
Skin cells (1-4+)	1+		1+		1+		
Sample volume (liters)	75		75		75		
§ TOTAL SPORES/m3		67		110		1,900	

#### **Comments:**

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

The analytical sensitivity is the spores/m3 divided by the raw count. The limit of detection is the analytical sensitivity multiplied by the sample volume divided by 1000.

EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

<sup>†</sup> The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.

<sup>††</sup>Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher then reported. It is important to account for samples volumes when evaluating dust levels.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory. ‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

<sup>§</sup> Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# **MoldRANGETM: Extended Outdoor Comparison**

Outdoor Location: 042613-02, Exterior, North Entrance

Fungi Identified	Outdoor	Typical Outdoor Data for:				Typical Outdoor Data for:							
	data	Aı	April in California (n‡=16784)†			The er	ntire yea	ar in Ca	lifornia	(n‡=18	8141)†		
	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	13	13	27	60	93	55	13	13	27	67	110	54
Bipolaris/Drechslera group	-	7	13	13	27	40	9	7	13	13	27	40	12
Chaetomium	-	8	13	13	27	40	18	8	13	13	27	47	19
Cladosporium	270	110	160	430	1,100	1,900	96	110	210	630	1,700	2,800	97
Curvularia	-	7	8	13	13	27	2	7	13	13	27	53	6
Nigrospora	-	7	10	13	13	27	4	7	13	13	27	53	8
Other brown	-	13	13	13	40	53	33	13	13	13	40	53	34
Penicillium/Aspergillus types	-	53	53	160	430	690	79	53	100	210	590	1,000	85
Stachybotrys	-	7	13	13	33	67	5	7	13	13	33	67	4
Torula	-	11	13	13	40	67	14	8	13	13	40	67	12
Seldom found growing indoors**													
Ascospores	270	27	53	110	370	690	75	25	53	110	360	690	71
Basidiospores	530	53	80	270	960	2,000	93	53	80	270	1,000	2,400	93
Rusts	-	13	13	25	53	93	35	13	13	13	53	80	27
Smuts, Periconia, Myxomycetes	53	13	13	40	110	200	67	13	13	40	110	200	68
§ TOTAL SPORES/m3	1,100												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

 $\ddagger$ n = number of samples used to calculate data.

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EMLab P&K, LLC EMLab ID: 1055837, Page 1 of 3

<sup>\*</sup>The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

<sup>\*\*</sup>These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# **MoldRANGETM: Extended Outdoor Comparison**

Outdoor Location: 042713-01, Exterior, South Entrance

Fungi Identified	Outdoor	Typical Outdoor Data for:			ı	Typica	l Outo	loor Da	ata for	:			
	data	Aj	April in California (n‡=16784)†			The er	ntire yea	ar in Ca	lifornia	(n‡=18	8141)†		
	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	13	13	13	27	60	93	55	13	13	27	67	110	54
Bipolaris/Drechslera group	-	7	13	13	27	40	9	7	13	13	27	40	12
Chaetomium	-	8	13	13	27	40	18	8	13	13	27	47	19
Cladosporium	640	110	160	430	1,100	1,900	96	110	210	630	1,700	2,800	97
Curvularia	-	7	8	13	13	27	2	7	13	13	27	53	6
Nigrospora	-	7	10	13	13	27	4	7	13	13	27	53	8
Other brown	13	13	13	13	40	53	33	13	13	13	40	53	34
Penicillium/Aspergillus types	-	53	53	160	430	690	79	53	100	210	590	1,000	85
Stachybotrys	-	7	13	13	33	67	5	7	13	13	33	67	4
Torula	-	11	13	13	40	67	14	8	13	13	40	67	12
Seldom found growing indoors**													
Ascospores	210	27	53	110	370	690	75	25	53	110	360	690	71
Basidiospores	270	53	80	270	960	2,000	93	53	80	270	1,000	2,400	93
Rusts	13	13	13	25	53	93	35	13	13	13	53	80	27
Smuts, Periconia, Myxomycetes	27	13	13	40	110	200	67	13	13	40	110	200	68
§ TOTAL SPORES/m3	1,200												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

 $\ddagger$ n = number of samples used to calculate data.

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EMLab P&K, LLC EMLab ID: 1055837, Page 2 of 3

<sup>\*</sup>The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

<sup>\*\*</sup>These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# **MoldRANGETM: Extended Outdoor Comparison**

Outdoor Location: 042713-04, Exterior, North Entrance

Fungi Identified	Outdoor	Typical Outdoor Data for:			Typical Outdoor Data for:				:				
	data	Aı	April in California (n‡=16784)†			The er	ntire yea	ar in Ca	lifornia	(n‡=18	8141)†		
	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	13	13	27	60	93	55	13	13	27	67	110	54
Bipolaris/Drechslera group	-	7	13	13	27	40	9	7	13	13	27	40	12
Chaetomium	-	8	13	13	27	40	18	8	13	13	27	47	19
Cladosporium	-	110	160	430	1,100	1,900	96	110	210	630	1,700	2,800	97
Curvularia	-	7	8	13	13	27	2	7	13	13	27	53	6
Nigrospora	-	7	10	13	13	27	4	7	13	13	27	53	8
Other brown	-	13	13	13	40	53	33	13	13	13	40	53	34
Penicillium/Aspergillus types	1,300	53	53	160	430	690	79	53	100	210	590	1,000	85
Stachybotrys	-	7	13	13	33	67	5	7	13	13	33	67	4
Torula	13	11	13	13	40	67	14	8	13	13	40	67	12
Seldom found growing indoors**													
Ascospores	210	27	53	110	370	690	75	25	53	110	360	690	71
Basidiospores	430	53	80	270	960	2,000	93	53	80	270	1,000	2,400	93
Rusts	-	13	13	25	53	93	35	13	13	13	53	80	27
Smuts, Periconia, Myxomycetes	13	13	13	40	110	200	67	13	13	40	110	200	68
§ TOTAL SPORES/m3	1,900												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

 $\ddagger$ n = number of samples used to calculate data.

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EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

<sup>\*</sup>The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

<sup>\*\*</sup>These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Outdoor Summary: 042613-02: Exterior, North Entrance

Species detected		Outdoo	r sample s <sub>l</sub>	pores/m3	Typical outdoor ranges	Freq.	
	<100	1K	10K	>100K		(North America)	%
Ascospores					270	13 - 200 - 5,500	76
Basidiospores					530	13 - 430 - 23,000	92
Cladosporium					270	27 - 480 - 10,000	91
Penicillium/Aspergillus types					< 13	13 - 170 - 2,700	69
Smuts, Periconia, Myxomycetes					53	7 - 50 - 970	64
Total					1,100		

The "Typical outdoor ranges" and "Freq. %" columns show the typical low, medium, and high spore counts per cubic meter and the frequency of occurrence for the given spore type. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values when the spore type is detected. For example, if the low value is 53 and the frequency of occurrence is 63%, it would mean that we typically detect the given spore type on 63 percent of all outdoor samples and, when detected, 2.5% of the time it is present in levels below 53 spores/m3.

#### **Indoor Samples**

Location: 042613-01: Decon Unit

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 5%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.6667	dF: 4 Result: 0.4000 Critical value: N/A Outside Similar: N/A	Score: 104 Result: Low
Species 1	Detected		Spores/m3	
		<100 1K	10K	>100K
	Basidiospores			53
Smuts, P	Periconia, Myxomycetes			13
	Total			67

Location: 042713-02: Mens NW RR Entrance

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 5%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.6667	dF: 4 Result: -0.3500 Critical value: N/A Outside Similar: N/A	Score: 103 Result: Low
Species	Detected	100	Spores/m3	10017
	Cladaanani	<100 1K	10K	>100K
	Cladosporium			53
Smuts, F	Periconia, Myxomycetes			13
	Total			67

EMLab P&K, LLC EMLab ID: 1055837, Page 1 of 2

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

#### MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Location: 042713-03: Inside Containment

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio (indoor/outdoo		Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 9%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.6667		dF: 4 Result: 0.1500 Critical value: N/A Outside Similar: N/A	Score: 110 Result: Low
Species	Detected			Spores/m3	
		<100	1K	10K	>100K
	Basidiospores				53
Smuts, F				53	
	Total				110

<sup>\*</sup> The Friedman chi-square statistic is a non-parametric test that examines variation in a set of data (in this case, all indoor spore counts). The null hypothesis (H0) being tested is that there is no meaningful difference in the data for all indoor locations. The alternative hypothesis (used if the test disproves the null hypothesis) is that there is a difference between the indoor locations. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

\*\*\*\* MoldSCORE<sup>TM</sup> is a specialized method for examining air sampling data. It is a score between 100 and 300, with 100 indicating a greater likelihood that the airborne indoor spores originated from the outside, and 300 indicating a greater likelihood that they originated from an inside source. The Result displayed is based on the numeric score given and will be either Low, Medium, or High, indicating a low, medium, or high likelihood that the spores detected originated from an indoor source. EMLab P&Kreserves the right to, and may at anytime, modify or change the MoldScore algorithm without notice.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor ranges" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical analysis provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the data contained in, or any actions taken or omitted in reliance upon, this report.

EMLab P&K, LLC EMLab ID: 1055837, Page 2 of 2

<sup>\*\*</sup> An agreement ratio is a simple method for assessing the similarity of two samples (in this case the indoor sample and the outdoor summary) based on the spore types present. A score of one indicates that the types detected in one location are the same as that in the other. A score of zero indicates that none of the types detected indoors are present outdoors. Typically, an agreement of 0.8 or higher is considered high.

<sup>\*\*\*</sup> The Spearman rank correlation is a non-parametric test that examines correlation between two sets of data (in this case the indoor location and the outdoor summary). The null hypothesis (H0) being tested is that the indoor and outdoor samples are unrelated. The alternative hypothesis (used if the test disproves the null hypothesis) is that the samples are similar. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Outdoor Summary: 042713-01: Exterior, South Entrance

Species detected		Outdoo	r sample sp	ores/m3	Typical outdoor ranges	Freq.	
	<100	1K	10K	>100K		(North America)	<b>%</b>
Alternaria					13	7 - 33 - 570	46
Ascospores					210	13 - 200 - 5,500	76
Basidiospores				2	270	13 - 430 - 23,000	92
Cladosporium					540	27 - 480 - 10,000	91
Other brown					13	7 - 13 - 120	24
Penicillium/Aspergillus types				<u> </u>	: 13	13 - 170 - 2,700	69
Rusts					13	7 - 20 - 350	20
Smuts, Periconia, Myxomycetes					27	7 - 50 - 970	64
Total				1,	200		

The "Typical outdoor ranges" and "Freq. %" columns show the typical low, medium, and high spore counts per cubic meter and the frequency of occurrence for the given spore type. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values when the spore type is detected. For example, if the low value is 53 and the frequency of occurrence is 63%, it would mean that we typically detect the given spore type on 63 percent of all outdoor samples and, when detected, 2.5% of the time it is present in levels below 53 spores/m3.

#### **Indoor Samples**

Location: 042613-01: Decon Unit

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 5%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.4444	dF: 7 Result: 0.5000 Critical value: 0.6786 Outside Similar: No	Score: 105 Result: Low
Species 1	Detected		Spores/m3	
		<100 1K	10K	>100K
	Basidiospores			53
Smuts, P	Periconia, Myxomycetes			13
	Total			67

EMLab P&K, LLC EMLab ID: 1055837, Page 1 of 3

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

#### MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Location: 042713-02: Mens NW RR Entrance

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)			
Result: 5%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.4444	dF: 7 Result: 0.6429 Critical value: 0.6786 Outside Similar: No	Score: 102 Result: Low			
Species 1	Detected		Spores/m3				
		<100 1K	10K	>100K			
	Cladosporium			53			
Smuts, P	Periconia, Myxomycetes			13			
	Total			67			

Location: 042713-03: Inside Containment

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)			
Result: 8%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.4444	dF: 7 Result: 0.4732 Critical value: 0.6786 Outside Similar: No	Score: 110 Result: Low			
Species 1	Detected		Spores/m3				
		<100 1K	10K	>100K			
	Basidiospores			53			
Smuts, P	Periconia, Myxomycetes			53			
	Total			110			

<sup>\*</sup> The Friedman chi-square statistic is a non-parametric test that examines variation in a set of data (in this case, all indoor spore counts). The null hypothesis (H0) being tested is that there is no meaningful difference in the data for all indoor locations. The alternative hypothesis (used if the test disproves the null hypothesis) is that there is a difference between the indoor locations. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

EMLab P&K, LLC EMLab ID: 1055837, Page 2 of 3

<sup>\*\*</sup> An agreement ratio is a simple method for assessing the similarity of two samples (in this case the indoor sample and the outdoor summary) based on the spore types present. A score of one indicates that the types detected in one location are the same as that in the other. A score of zero indicates that none of the types detected indoors are present outdoors. Typically, an agreement of 0.8 or higher is considered high.

<sup>\*\*\*</sup> The Spearman rank correlation is a non-parametric test that examines correlation between two sets of data (in this case the indoor location and the outdoor summary). The null hypothesis (H0) being tested is that the indoor and outdoor samples are unrelated. The alternative hypothesis (used if the test disproves the null hypothesis) is that the samples are similar. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

## **MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report**

\*\*\*\* MoldSCORE<sup>TM</sup> is a specialized method for examining air sampling data. It is a score between 100 and 300, with 100 indicating a greater likelihood that the airborne indoor spores originated from the outside, and 300 indicating a greater likelihood that they originated from an inside source. The Result displayed is based on the numeric score given and will be either Low, Medium, or High, indicating a low, medium, or high likelihood that the spores detected originated from an indoor source. EMLab P&Kreserves the right to, and may at anytime, modify or change the MoldScore algorithm without notice.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor ranges" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical analysis provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the data contained in, or any actions taken or omitted in reliance upon, this report.

EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

# MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Outdoor Summary: 042713-04: Exterior, North Entrance

Species detected		Outdoo	r sample s	pores/m3		Typical outdoor ranges	Freq.
	<100	1K	10K	>100K		(North America)	%
Ascospores				210	0	13 - 200 - 5,500	76
Basidiospores				430	0	13 - 430 - 23,000	92
Cladosporium				< 1	3	27 - 480 - 10,000	91
Penicillium/Aspergillus types				1,30	00	13 - 170 - 2,700	69
Smuts, Periconia, Myxomycetes				13		7 - 50 - 970	64
Torula				13		7 - 13 - 170	9
Total				1,90	00		

The "Typical outdoor ranges" and "Freq. %" columns show the typical low, medium, and high spore counts per cubic meter and the frequency of occurrence for the given spore type. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values when the spore type is detected. For example, if the low value is 53 and the frequency of occurrence is 63%, it would mean that we typically detect the given spore type on 63 percent of all outdoor samples and, when detected, 2.5% of the time it is present in levels below 53 spores/m3.

#### **Indoor Samples**

Location: 042613-01: Decon Unit

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)			
Result: 3%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.5714	dF: 5 Result: 0.1250 Critical value: 0.8000 Outside Similar: No	Score: 104 Result: Low			
Species	Detected		Spores/m3				
		<100 1K	10K	>100K			
	Basidiospores			53			
Smuts, Periconia, Myxomycetes				13			
	Total			67			

#### Location: 042713-02: Mens NW RR Entrance

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)			
Result: 3%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.2857	dF: 6 Result: -0.4857 Critical value: 0.7714 Outside Similar: No	Score: 103 Result: Low			
Species	Detected		Spores/m3				
		<100 1K	10K	>100K			
	Cladosporium			53			
Smuts, F	Periconia, Myxomycetes			13			
	Total			67			

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

#### MoldSTAT<sup>TM</sup>: Supplementary Statistical Spore Trap Report

Location: 042713-03: Inside Containment

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio <sup>*</sup> (indoor/outdoor		MoldSCORE**** (indoor/outdoor)				
Result: 5%	dF: 2 Result: 0.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.5714	dF: 5 Result: 0.0250 Critical value: 0.8000 Outside Similar: No	Score: 110 Result: Low				
Species	Detected		Spores/m3					
		<100	K 10K	>100K				
	Basidiospores			53				
Smuts, F	Periconia, Myxomycetes			53				
	Total			110				

<sup>\*</sup> The Friedman chi-square statistic is a non-parametric test that examines variation in a set of data (in this case, all indoor spore counts). The null hypothesis (H0) being tested is that there is no meaningful difference in the data for all indoor locations. The alternative hypothesis (used if the test disproves the null hypothesis) is that there is a difference between the indoor locations. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

\*\*\*\* MoldSCORE<sup>TM</sup> is a specialized method for examining air sampling data. It is a score between 100 and 300, with 100 indicating a greater likelihood that the airborne indoor spores originated from the outside, and 300 indicating a greater likelihood that they originated from an inside source. The Result displayed is based on the numeric score given and will be either Low, Medium, or High, indicating a low, medium, or high likelihood that the spores detected originated from an indoor source. EMLab P&Kreserves the right to, and may at anytime, modify or change the MoldScore algorithm without notice.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor ranges" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical analysis provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the data contained in, or any actions taken or omitted in reliance upon, this report.

EMLab P&K, LLC EMLab ID: 1055837, Page 2 of 2

<sup>\*\*</sup> An agreement ratio is a simple method for assessing the similarity of two samples (in this case the indoor sample and the outdoor summary) based on the spore types present. A score of one indicates that the types detected in one location are the same as that in the other. A score of zero indicates that none of the types detected indoors are present outdoors. Typically, an agreement of 0.8 or higher is considered high.

<sup>\*\*\*</sup> The Spearman rank correlation is a non-parametric test that examines correlation between two sets of data (in this case the indoor location and the outdoor summary). The null hypothesis (H0) being tested is that the indoor and outdoor samples are unrelated. The alternative hypothesis (used if the test disproves the null hypothesis) is that the samples are similar. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

Outdoor Sample: 042613-02 Exterior, North Entrance

Fungi Identified	Ou	tdo	or	san	ıpl	e	spoi	es	/m	3	Raw	Spores/
	<100	)		1K			10K	3	>100	K	count	m3
Generally able to grow indoors*												
Alternaria											ND	< 13
Bipolaris/Drechslera group											ND	< 13
Chaetomium											ND	< 13
Cladosporium											5	270
Curvularia											ND	< 13
Nigrospora											ND	< 13
Penicillium/Aspergillus types†											ND	< 13
Stachybotrys											ND	< 13
Torula											ND	< 13
<b>Seldom found growing indoors**</b>												
Ascospores											5	270
Basidiospores											10	530
Rusts											ND	< 13
Smuts, Periconia, Myxomycetes											4	53
Total				•								1,120

Location: 042613-01 Decon Unit

Fungi Identified	In	do	or	sam	ıpl	e	sp	ore	es/i	m.	3	Raw	Spores/
	<100	)		1K			1	0 <b>K</b>		>10	0K	count	m3
Generally able to grow indoors*													
Alternaria												ND	< 13
Bipolaris/Drechslera group												ND	< 13
Chaetomium												ND	< 13
Cladosporium												ND	< 13
Curvularia												ND	< 13
Nigrospora												ND	< 13
Penicillium/Aspergillus types†												ND	< 13
Stachybotrys												ND	< 13
Torula												ND	< 13
Seldom found growing indoors**													
Ascospores												ND	< 13
Basidiospores												1	53
Rusts												ND	< 13
Smuts, Periconia, Myxomycetes												1	13
Total													67

100	MoldSC 200		Score					
			100					
			100					
			100					
			100					
			100					
			100					
			100					
			100					
			100					
			100					
			104					
			100					
			102					
Fina	Final MoldSCORE							

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

**Location:** 042713-02 Mens NW RR Entrance

Fungi Identified	In	do	or	sam	ple	S	pore	s/r	n3	;	Raw	Spores/
	<100			1K			10K	>	100	)K	count	m3
Generally able to grow indoors*												
Alternaria											ND	< 13
Bipolaris/Drechslera group											ND	< 13
Chaetomium											ND	< 13
Cladosporium											1	53
Curvularia											ND	< 13
Nigrospora											ND	< 13
Penicillium/Aspergillus types†											ND	< 13
Stachybotrys											ND	< 13
Torula											ND	< 13
Seldom found growing indoors**												
Ascospores											ND	< 13
Basidiospores											ND	< 13
Rusts											ND	< 13
Smuts, Periconia, Myxomycetes											1	13
Total												67

100 <b>MoldSCORE</b> 200 300	
	100
	100
	100
	103
	100
	100
	100
	100
	100
	100
	100
	100
	102
Final MoldSCORE	103

**Location:** 042713-03 Inside Containment

Fungi Identified	Inde	or	sam	ple s	spore	es/n	n3	Raw	Spores/
	<100		1K		10K	>	100I	count	m3
Generally able to grow indoors*									
Alternaria		Ш					Ш	ND	< 13
Bipolaris/Drechslera group		Ш					Ш	ND	< 13
Chaetomium								ND	< 13
Cladosporium		Ш						ND	< 13
Curvularia								ND	< 13
Nigrospora								ND	< 13
Penicillium/Aspergillus types†								ND	< 13
Stachybotrys								ND	< 13
Torula								ND	< 13
Seldom found growing indoors**									
Ascospores								ND	< 13
Basidiospores								1	53
Rusts								ND	< 13
Smuts, Periconia, Myxomycetes								4	53
Total									107

_	MoldSCORE;																		
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																			100
																			100
					Г			Г											100
																			100
														103					
																			100
																			110
	Final MoldSCORE												110						

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Client: GHD Inc. C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest. Date of Report: 04-27-2013

## MoldSCORETM: Spore Trap Report

\*The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

\*\*These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

Outdoor Sample: 042713-01 Exterior, South Entrance

Fungi Identified	Οι	ıtdo	or	sam	ıple	e s	por	es/	m3	Raw	Spores/
_	<10	0		ΙK		1	0K	>	100I	count	m3
Generally able to grow indoors*											
Alternaria										1	13
Bipolaris/Drechslera group										ND	< 13
Chaetomium										ND	< 13
Cladosporium										12	640
Curvularia										ND	< 13
Nigrospora										ND	< 13
Other brown										1	13
Penicillium/Aspergillus types†										ND	< 13
Stachybotrys										ND	< 13
Torula										ND	< 13
Seldom found growing indoors**											
Ascospores										4	210
Basidiospores										5	270
Rusts										1	13
Smuts, Periconia, Myxomycetes										2	27
Total											1,187

**Location:** 042613-01 Decon Unit

Fungi Identified	In	do	or	sam	ple	e s	por	es/	m	3	Raw	Spores/
	<100	)		1K			10K		>10	0K	count	m3
Generally able to grow indoors*												
Alternaria											ND	< 13
Bipolaris/Drechslera group					Ш						ND	< 13
Chaetomium											ND	< 13
Cladosporium											ND	< 13
Curvularia											ND	< 13
Nigrospora											ND	< 13
Penicillium/Aspergillus types†											ND	< 13
Stachybotrys											ND	< 13
Torula											ND	< 13
Seldom found growing indoors**												
Ascospores											ND	< 13
Basidiospores											1	53
Rusts					$\prod$						ND	< 13
Smuts, Periconia, Myxomycetes											1	13
Total												67

100	MoldSC 200		Score										
100	200	300	Beore										
			100										
			100										
			100										
			100										
			100										
			100										
			100										
			100										
			100										
			105										
			100										
			102										
Fina	Final MoldSCORE												

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

**Location:** 042713-02 Mens NW RR Entrance

Fungi Identified	Iı	ndo	0	r	sam	pl	e s	sį	ore	es/i	m	3	Raw	Spores/
	<10	00			1K			1	10K		>10	)0K	count	m3
Generally able to grow indoors*														
Alternaria													ND	< 13
Bipolaris/Drechslera group													ND	< 13
Chaetomium													ND	< 13
Cladosporium													1	53
Curvularia													ND	< 13
Nigrospora													ND	< 13
Penicillium/Aspergillus types†													ND	< 13
Stachybotrys													ND	< 13
Torula													ND	< 13
Seldom found growing indoors**														
Ascospores													ND	< 13
Basidiospores											Π		ND	< 13
Rusts													ND	< 13
Smuts, Periconia, Myxomycetes											Π		1	13
Total														67

MoldSCOR 200 3	E‡ 00 Score
	100
	100
	100
	102
	100
	100
	100
	100
	100
	100
	100
	100
	102
Final MoldSCORI	E 102

**Location:** 042713-03 Inside Containment

Fungi Identified	Inde	or	sam	ple s	spore	es/n	n3	Raw	Spores/
	<100		1K		10K	>	100I	count	m3
Generally able to grow indoors*									
Alternaria		Ш						ND	< 13
Bipolaris/Drechslera group		Ш					Ш	ND	< 13
Chaetomium								ND	< 13
Cladosporium		Ш						ND	< 13
Curvularia								ND	< 13
Nigrospora								ND	< 13
Penicillium/Aspergillus types†								ND	< 13
Stachybotrys								ND	< 13
Torula								ND	< 13
Seldom found growing indoors**									
Ascospores								ND	< 13
Basidiospores								1	53
Rusts								ND	< 13
Smuts, Periconia, Myxomycetes								4	53
Total									107

_	MoldSCORE;																		
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														104					
																			100
																			110
	Final MoldSCORE												110						

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Client: GHD Inc. C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest. Date of Report: 04-27-2013

## MoldSCORETM: Spore Trap Report

\*The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

\*\*These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

Outdoor Sample: 042713-04 Exterior, North Entrance

Fungi Identified	Oı	utd	00	r	san	np	le	S	po	res	s/r	n3	3	Raw	Spores/
<u> </u>	<10	00		1	١K	_		1	10K		>1	001	K	count	m3
Generally able to grow indoors*															
Alternaria														ND	< 13
Bipolaris/Drechslera group														ND	< 13
Chaetomium														ND	< 13
Cladosporium														ND	< 13
Curvularia														ND	< 13
Nigrospora														ND	< 13
Penicillium/Aspergillus types†														24	1,300
Stachybotrys														ND	< 13
Torula														1	13
Seldom found growing indoors**															
Ascospores														4	210
Basidiospores														8	430
Rusts														ND	< 13
Smuts, Periconia, Myxomycetes														1	13
Total															1,947

Location: 042613-01 Decon Unit

Fungi Identified	In	do	or	sam	ple	S	por	es/	m3	}	Raw	Spores/
	<100	)		1K			10K		>100	)K	count	m3
Generally able to grow indoors*												
Alternaria											ND	< 13
Bipolaris/Drechslera group											ND	< 13
Chaetomium											ND	< 13
Cladosporium											ND	< 13
Curvularia											ND	< 13
Nigrospora											ND	< 13
Penicillium/Aspergillus types†											ND	< 13
Stachybotrys											ND	< 13
Torula											ND	< 13
Seldom found growing indoors**												
Ascospores											ND	< 13
Basidiospores											1	53
Rusts											ND	< 13
Smuts, Periconia, Myxomycetes											1	13
Total												67

	MoldSC	ORE:	<u>:</u>
100	200	300	Score
			100
			100
			100
			100
			100
			100
			100
			100
			100
			100
			104
			100
			103
Final	MoldSC	ORE	104

Client: GHD Inc.

C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest.

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Date of Report: 04-27-2013

MoldSCORE<sup>TM</sup>: Spore Trap Report

**Location:** 042713-02 Mens NW RR Entrance

Fungi Identified	Ind	loc	r	sam	ple	S	pore	s/ı	n3	}	Raw	Spores/
	<100			1K			10K	>	>100	)K	count	m3
Generally able to grow indoors*												
Alternaria											ND	< 13
Bipolaris/Drechslera group											ND	< 13
Chaetomium											ND	< 13
Cladosporium											1	53
Curvularia											ND	< 13
Nigrospora											ND	< 13
Penicillium/Aspergillus types†											ND	< 13
Stachybotrys											ND	< 13
Torula											ND	< 13
Seldom found growing indoors**												
Ascospores											ND	< 13
Basidiospores											ND	< 13
Rusts											ND	< 13
Smuts, Periconia, Myxomycetes											1	13
Total												67

MoldSCORE 200 300	‡ Score										
	100										
	100										
	100										
	103										
	100										
	100										
	100										
	100										
	100										
	100										
	100										
	100										
	103										
Final MoldSCORE	103										

**Location:** 042713-03 Inside Containment

Fungi Identified	Indo	or s	ample	spore	s/m3	Raw	Spores/
	<100	1	K	10K	>1001	count	m3
Generally able to grow indoors*							
Alternaria						ND	< 13
Bipolaris/Drechslera group						ND	< 13
Chaetomium						ND	< 13
Cladosporium						ND	< 13
Curvularia						ND	< 13
Nigrospora						ND	< 13
Penicillium/Aspergillus types†						ND	< 13
Stachybotrys						ND	< 13
Torula						ND	< 13
Seldom found growing indoors**							
Ascospores						ND	< 13
Basidiospores						1	53
Rusts						ND	< 13
Smuts, Periconia, Myxomycetes						4	53
Total							107

_																	
MoldSCORE;																	
H	230 300																
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																	100
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																	100
																	100
					Г			Г									100
																	100
																	103
																	100
																	110
	Final MoldSCORE										110						

Date of Submittal: 04-27-2013

Date of Receipt: 04-27-2013

Client: GHD Inc. C/O: Ms. Erica Sattar

Re: 8410430; Corroded Drain Line Invest. Date of Report: 04-27-2013

## MoldSCORETM: Spore Trap Report

\*The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

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‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

EMLab P&K, LLC EMLab ID: 1055837, Page 3 of 3

# CHAIN OF CUSTODY www.EMLabPK.com



Cherry Hill, NJ: 1936 Olnsy Avenue, Cherry Hill, NJ 08003 \* (866) 871-1984
Phoenix, AZ: 1501 West Knudsen drive, Phoenix, AZ 85027 \* (800) 651-4602
San Bruno, CA: 1150 Beyhill Drive, #100, San Bruno, CA 94066 \* (866) 888-6653

Weather	Fog	Rein	Snow	Wind	Clear
. ▼ None					$\overline{\mathbf{x}}$
- Light					
Moderate .					
Heavy					

Spare

Trap

Bulk

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	d Drain line in	K/S1	NI - NI	ext Business Day	considered repeyed five	<del>-</del> Z		0	9		[왕]		\ 13 28	활송	ŭ,			l g
Zip Code: 95815	Sampting Date & Time: 10	42680427	\$D-S	eme Businoss Day Rush	of on Weekends, vill be so considered received five new business day. Please electus or advance of	起	Analysis	묎	52 5		퉏	8 8	벁		Sewage	Analysis	真	Š
PO Number:			WH-W	Veckend / Holiday	weekend ahalyala needs.	<u>&amp;</u>		Quantitative Spore Count	1-Media Surface Fungi (Genus ID 2-Media Surface Fungi (Genus ID	3-Wedla Surface Fungi (Gema ID	Culturable Air Fongi (Genus ID + Asp. spp.)	Gram Stain & Cot Legionelle cultura	Total Collform, E.	Mambrane Filtration (specify organism): MPN Bactaria (specify organism);		- I		Specify Service
Sample ID	Description	Semple Type	TAT (Abbye)	Total Volume / Area	Notes (Time of day, Torpo, RH, elc.)	圓	90 E	Quant	Paris C	Neg.	[흥]	Gram Legion	Total	Memb	QuantiTray	Asbestos	P.S.	and and a
042613-01 Dagon	Unit .	ST	WH	75ml	2415, 74 60		朩	i口	ode.	10				╗	rd;	ᆟᆮ	市	占
1446-04 Extern	or north entrance	g <del>V</del>	-₩	4	0120: 63,52	X	╬			葥	n			<b>-</b>	7	- - - -	詍	盂
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ST - Spore Trap: Zefon, Allergenco, Burkard  ST - Spore Trap: Zefon, Allergenco, Burkard  SW - Swab SO - Soil  SAS - Surface Air Sampler P - Potable Water B - Bulk  P - Potable Water B - Bulk  OY 27 12 / 09 15 Water 427 13		SAMPLETYPECODES	yeringar		REUNQUISHED BY	DATESTIME	RECEIVED BY	DEC DATE & TIME DATE
SAS - Surface Air Sampler P - Potable Water B - Bulk B - Bulk			T–Tape	D-Dust				1 1
and - Suillable Air Sampler P - Potable Water B - Buth		Allergenco, Burkard	SW - Swab	SO - Soil	Grin Stattan	104.27.13/0945	N/alladottuores	1
CP - Contact Plate NP - Non-Potable Water 0 - Other.			8 – Bulk			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- letterators -	112111
	CP - Contact Plate	NP - Non-Potable Water	<b>0</b> – Other:			'	•	945